

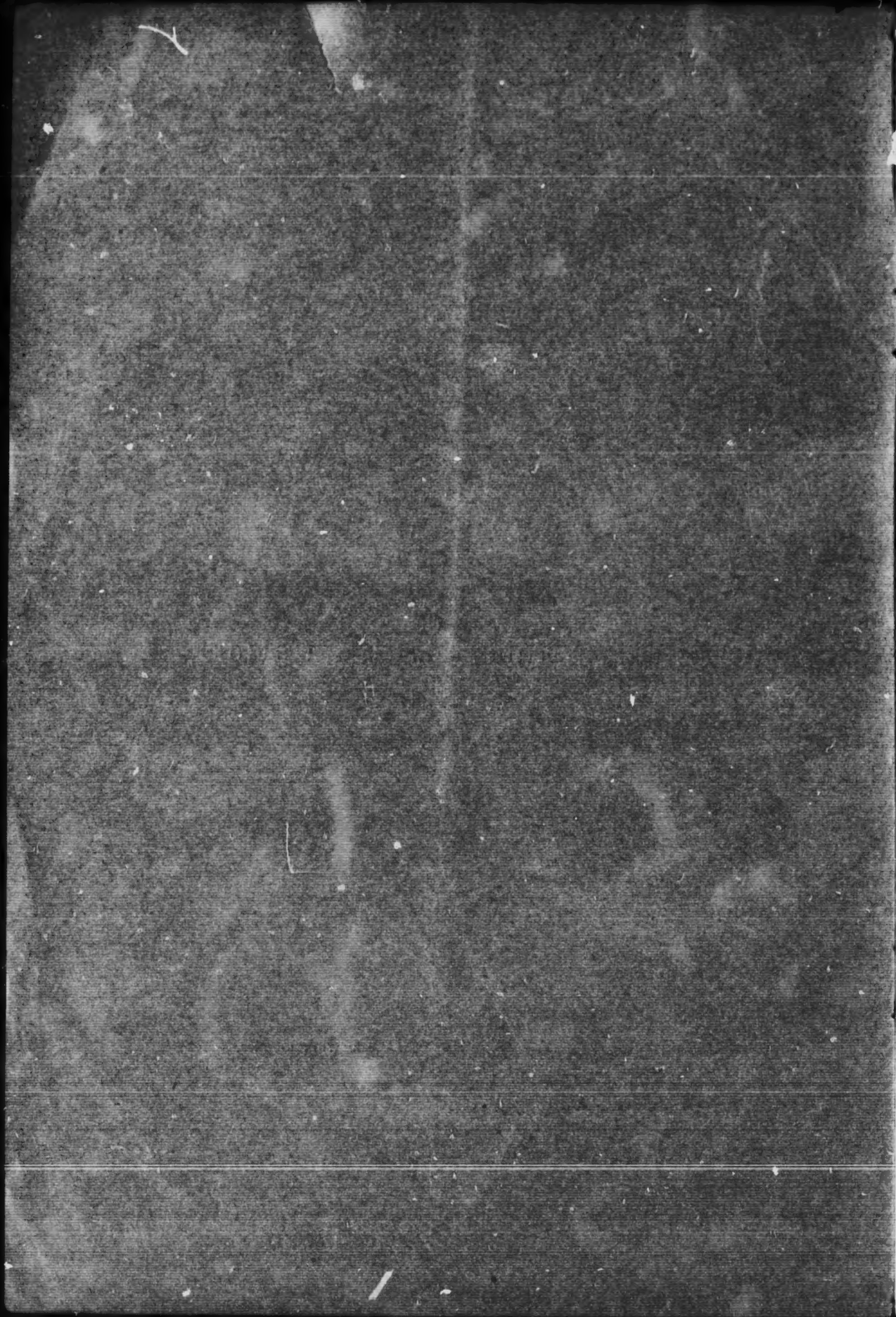
56

OUR PRESENT ATTITUDE TOWARDS TUBERCULOSIS

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THE intent of this paper is to point out certain conditions as they exist in Ontario—and Ontario is certainly no exception to the country at large—with reference to the physician's relation to them as it is, and as it should be. It will be necessary first to consider some sociological aspects, and to review briefly certain accepted theories and scientifically demonstrated facts regarding the prevalence of tuberculosis.

In Canada the death rate from all forms of tuberculosis is one hundred and eighty per hundred thousand of population, according to the census of 1901. This death rate is almost identical with that of England and Wales, and is somewhat lower than that of the United States for the same period, but its percentage, 11.96, of the general mortality is rather higher than in either of these countries.

In Ontario the report for 1908 shows a death rate from tuberculosis of one hundred and twelve, a pleasing contrast with that of one hundred and fifty in 1901, while the deaths from tuberculosis were 7.7 per cent. of the general death rate, as compared with 11 per cent. seven years previously. From 1881 to 1901 the deaths from tuberculosis were from 10 to 11 per cent. of the general mortality. Therefore in Ontario, in so far as figures are available, it seems we have more than confirmed Professor Osler's graphic statement that we to-day run rather less than half the risk of dying of consumption than our grandfathers did, and only about three-fourths the risk our parents did, a statement based upon the fact that eighty years ago consumption caused one-fifth of all deaths, while to-day it causes but one-tenth. We have, however, still to reckon with two thousand five hundred deaths yearly from tuberculosis, a number probably a good deal below the actual mark because of faulty diagnosis and improperly reported death certificates. This discrepancy may be so great that the medical health officer of our largest city is inclined to raise the three hundred and thirty-three reported deaths to five hundred and seventy-six

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estimated deaths, or 72 per cent. increase, as a fair actual estimate. Mortality figures, however, estimate the dead only, and not the wounded. Some idea of the numbers of these can be obtained from recent autopsy records. We have to rely mainly upon European statistics, and it must be remembered that only the sick enter hospitals, that the dead only form a basis of investigation, that a considerable number of tuberculous patients are admitted to some hospitals, and that a hospital population is not typical of the whole population, especially as regards age and social condition. But, since the working classes produce the great majority of patients, and tuberculosis is especially the problem of this class, such researches must give much information of value. According to the criteria taken as to what is evidence of tuberculosis, it has been shown that it exists in from 50 per cent. to 96 per cent. of all bodies, where the material has consisted mainly of adults, in 48 per cent. of children under fifteen years, and in 16 per cent. of children under three years.

The study of the modes of invasion as shown at autopsy gives also valuable suggestion as to the possible frequency of infection. The tonsils are often the site of a primary tuberculosis, and have been found with this disease in 15 per cent. of the cases investigated, one series consisting of children under thirteen years of age who came consecutively to autopsy. The reports are contradictory as regards the frequency of primary intestinal tuberculosis, but English pathologists pretty well agree to the presence of a primary intestinal lesion in 18 per cent. of all cases. Especially instructive are the series of cases from American and German sources in children who died of diphtheria, which give results very similar to one another. In the nine hundred and thirty-four cases from the two series, one hundred and seventy-five, or 18 per cent., showed tuberculosis, and the origin was primary in the intestine in 37 per cent.

The primary tuberculosis of the lymph nodes connected with the digestive tract does not at all necessarily mean infection with bovine bacilli, as there is often abundant opportunity, especially in children, for the swallowing of tuberculous material of human source. In New York City, where about 10 per cent. of average milk specimens yield tubercle bacilli, it is estimated that but 2½ per cent. of all tuberculosis is caused by bovine infection, and 20 per cent. of that of infants, but 45 per cent. of cases of tuberculous cervical adenitis alone in children under sixteen is due to this cause.

There is a tendency to assign far greater weight than formerly to primary infections by way of the digestive tract, more especially in children, but pediatricians are inclined to ascribe the great majority of infections to the pulmonary route, and consider that the intestinal route plays a relatively unimportant rôle. In one hundred and twenty-five consecutive autopsies at the New York Foundling Hospital, bronchial glands were found tuberculous in all.

The relative frequency at all ages of the sites of the primary lesion is found to be one-fifth in the digestive tract, two-fifths in the respiratory tract, one-fifth in either of these tracts, and one-fifth of uncertain site.

It is natural to assume a seemingly obvious air infection for the respiratory group, but descending infection from the cervical and ascending infection from abdominal nodes frequently cannot be excluded. The present general opinion is, however, that pulmonary tuberculosis, in a large majority of cases, originates from a primary air-borne infection of the lungs.

Additional evidence as to the prevalence of tuberculosis has been recently given by tuberculin, and the findings obtained by it corroborate in general those of autopsy. Relatively small doses given subcutaneously gave 68 per cent. of reactions in soldiers in the Austrian army, men who are of better average physical condition than the general population, and who have an incidence of pulmonary tuberculosis of only one per thousand as compared with 2.4 per thousand in British and colonial troops. The cutaneous test gives a positive reaction in the great majority of adults, while in children the percentage of reacting cases rises rapidly from 5 per cent. in the first year to 70 per cent. in the tenth year, and to above 90 per cent. in the fourteenth year.

In childhood, the earlier the age the more patients reacting show a manifest tuberculosis, and all patients under two years who react are clinically tuberculous. There is good reason for the speculative point of view that tuberculosis is eminently a children's disease, producing fatal results at once in early childhood, or an increased resistance to subsequent infections as the result of the successful reaction of the organism against the infection; and that the whole pathology of adults demonstrates only chronic processes, re-infections, or terminal stages. It has been estimated that only about one-fourth of fatal cases can be ascribed to infections of short duration, the balance having been acquired primarily in childhood. The fact of infection itself probably plays a less important rôle in the varying production of tuberculosis than the individual resistance

to the more or less inevitable infection. A point also to be considered here is the recent conclusion of a distinguished biometrician, "that the diathesis of pulmonary tuberculosis is certainly inherited, and the intensity of inheritance is sensibly the same as that of any normal physical character yet investigated by man." Statistical inquirers, however, do not satisfactorily allow for the greater opportunity of infection for the descendants, nor, in upholding the influence of the inherited diathesis, is the mortality in direct proportion to the density of population explained.

Some idea of the magnitude of the tuberculosis problem may be deduced from such observations as those already discussed, but it is hardly possible to estimate even roughly the actual amount of sickness caused by tuberculosis in any population. Because of certain features of civilized life there is a fairly even distribution of the disease in civilized lands, very little influenced by climatic differences, but with local variations proportionate in the main to the relative density of population. It is evident that the disease is enormously frequent in any civilized community, affecting at some time almost everybody, but it by no means follows that what may be regarded as a biological implantation will in all instances give recognizable clinical manifestations. Considering the foregoing statistics, Prof. Osler's estimate seems fully conservative when he says that comparatively few people reach fifty years of age without a focus somewhere of tuberculosis, and that if even only 50 per cent. develop this focus, the number who may become seriously diseased is enormous.

Man is everywhere the great infective agent for man, but this must not let us lose sight of the fact that notwithstanding the small percentage of all cases that are actually due to the bovine form of tuberculosis, one-fifth of the tuberculosis in small children is due to this cause. From the statistics of tuberculin reactions obtained from the Veterinary Director General, tuberculosis may not seem to be highly prevalent in Canadian cattle, as only 10 per cent. react, but a high authority on veterinary matters in Ontario considers that 25 per cent. is a very conservative estimate of the incidence of tuberculosis in Ontario dairy herds. This estimate, as one might reasonably expect, is not very far from that of the incidence in cattle in the Eastern States.

It is a familiar matter that the greatest loss of life due to tuberculosis occurs in the working age period, and the actual number of deaths, and the proportional mortality, are highest in young adult life. In Canada 40 per cent. of all deaths occurring between

fifteen and thirty-four years of age are due to tuberculosis. If, however, one compares the figures of deaths from tuberculosis with the total population at different ages, because of the lesser number of people living at the later age periods, late middle life actually shows a higher death rate from tuberculosis than early adult life (English statistics, 1904). We have, therefore, much reason to suspect tuberculosis, clinically, in patients of later adult life, though, because of the greater amount of illness at this period, tuberculosis, amongst the varied causes, plays apparently a less important rôle than in earlier life.

With two thousand five hundred deaths in Ontario from all forms of tuberculosis for each of the years 1907 and 1908, two thousand one hundred (84 per cent.) are recorded as tuberculosis of the lungs. We may, then, conservatively estimate the actual amount of active pulmonary tuberculosis in Ontario as at least ten thousand cases. Any figures suggesting the incidence of disease from the death rate are open to criticism, but this number is reached by two methods which seem reasonable. There are five hundred and forty-seven beds in the nine sanatoria and special hospitals, which have in the past year treated fourteen hundred and twenty-one cases. A fair classification of these cases from a sanatorium standpoint would be 15 per cent. incipient, 45 per cent. moderately advanced, and 40 per cent. far advanced. Assuming that the mortality figures represent the death of the far advanced cases, who all die within the year, and that the proportion of other cases to these is the same in the province as in the sanatoria, then the total number of recognized cases in the province, including those treated in sanatoria, is fifty-two hundred and fifty of the same average type. As definite symptoms of tuberculosis have been found to average more than a year's duration in the sanatorium group—it is naturally often impossible to fix the time of actual implantation—we may assume that there are at least an equal number with active pulmonary tuberculosis, besides those estimated from the death rate, giving ten thousand five hundred in all. In pre-sanatorium times the average duration of life of tuberculous out-patients, with active disease, at a metropolitan hospital, was placed by Pollock at more than four years, so that at the present day under improved conditions five years would be a very reasonable estimate of the duration of the disease. From the actual number of deaths we must, then, estimate approximately ten thousand five hundred, a number identical with that obtained by the other method. R. W. Phillips, of Edinburgh, considers that a conserva-

tive estimate of the cases of pulmonary tuberculosis worthy of medical supervision in any locality may be made by multiplying the mortality by ten. Estimated in this way the incidence of tuberculosis would be twenty-one thousand, just twice that already given. The proportion of these will vary according to the density of population, as does the death rate, which is the ratio of one hundred for country and small town, one hundred and seventeen for the group of fifteen towns over five thousand, and one hundred and forty-three for the group of nineteen cities. Even under the present improved percentage mortality, one hundred and seventy-one thousand of those now living in Ontario may expect to die of tuberculosis. If the correction of 72 per cent. increase over the reported mortality mentioned above, is applied to the province, this number should be increased to two hundred and ninety thousand. According to the smaller estimate of present cases, each of the three thousand physicians in Ontario, if cases were fairly divided, should now have four under treatment, and he should acquire a new active case every eighteen months, which will die, besides others which should recover. Phillips' estimate would give eight to each man to start with.

There is cause for satisfaction that there has been an actual reduction of seven hundred fatal cases (23 per cent.) in 1908 compared with ten years earlier, at which time the institutional segregation and education of cases of pulmonary tuberculosis in Ontario was inaugurated.

Contrasting the death rates of various countries and communities, with phthisis excluded, for the early eighties—the time of the discovery of the tubercle bacillus—with the earlier years of the present decade the annual death rate has in all been reduced in varying degrees from 3 to 33 per cent., while the diminution in the death rate of phthisis, except in two countries, has been from 7 to 52 per cent. In general, the reduction in death rate from phthisis is enormously greater than that of the general death rate from all other causes, and the experience of a number of countries is that the conditions improving general health have not had any constant effect on the prevalence of tuberculosis, as these are frequently offset by fresh handicaps developing in modern industrial life. Improvement in general sanitary and social conditions, though exerting a certain influence, has not been the principal cause in diminishing tuberculosis, and influences more powerful and more rapid in operation must have been at work. Newsholme epitomizes an elaborate analysis of the causes which

have decreased the death rate of tuberculosis by saying that "no influence except that of institutional segregation has appeared in actual experience in a constant relation to the amount of tuberculosis, and it must therefore be accepted as having been the predominant influence." Until quite recently only a relatively small amount of this segregation has been accomplished in institutions especially intended for this purpose, and therefore hospitals, homes, refuges, and almshouses have played the more important part.

In Ontario, these latter institutions have no doubt played some part. Fifty-four only died of tuberculosis in the year 1909 in provincial asylums, 17 per cent. of the total number of deaths. When, however, only one-seventh of the total number treated in the special institutions for tuberculosis die in them, and the fourteen hundred patients therein treated (1910) remain for an average period of three months, it is reasonable to assume that their main influence is in education, both directly for the patient and indirectly for the public, rather than in segregation. This influence, small in the earlier years of the decade 1897 to 1907, has been increasing as their number and the number of patients treated have increased, and to this educational influence must be added that of the recent auxiliary influences in individual treatment and education, the dispensaries and visiting nurses, besides the general educational propaganda against tuberculosis. In Ontario education and segregation probably divide honours in the 25 per cent. reduced death rate.

Our provincial government expects to solve the problem by advocating the establishment of local sanatoria through local organizations—which it aids generously by contributing both towards capital and maintenance costs—and by the education of school children. Both of these measures are admirable in themselves, but, without wishing to depreciate the value of local sanatoria, I do wish to emphasize the fact that the easy care of advanced cases within the limits of the municipality is the more pressing need in all communities, and that this need in the small communities at least, where general hospitals already exist, could probably be most cheaply met, both in capital and maintenance expense, by erecting a wing or building on the grounds of the hospital for irrecoverable cases, and utilizing the administrative organization of these hospitals. The recently published opinion of the State of Rhode Island commission on hospitals to consider the care of advanced cases is, that, since the chief object in sending an advanced case to a hospital is not the good of the individual, but the good of the community,

unless the patient or his relatives wish to pay towards the cost of his maintenance, there should be no charge, but that since a sanatorium affords a patient the opportunity to save or prolong his life, he can, if he is able, with reason be expected to pay part of the cost. The establishment of small sanatoria must be of benefit, both to the general public welfare and in great part to the individuals therein treated. I have the conviction, however, that the patient who has a fair fighting chance has the best opportunity for recovery in larger institutions, or centres where an accumulated experience in tuberculosis has been obtained, since the smaller institutions can rarely hope to retain men of either breadth of training or specialized experience, and in the efficient management of tuberculosis both of these requisites are essential. But such larger institutions must surely be placed in adequate hands.

That the onus of responsibility in combating this preventable disease should rest upon voluntary organizations, such as anti-tuberculosis associations, is scarcely more defensible, logically, than that there should be anti-scarlet fever or anti-small-pox associations. The results of the latter diseases are certainly more dramatic, but so far as actual mortality goes, that of small-pox in the eighteenth century, when it was at its worst, showed just the same percentage of deaths that tuberculosis does to-day. As an offset to the disfigurement and deformity resulting from small-pox, we have the misery, poverty, and economic loss of tuberculosis. With our present knowledge of the effect of segregation in limiting the spread of acute infections, we would not suffer this more dramatic, acute infection of small-pox at any cost, in the present day, to inflict any community, even though we had not the simple means of protection that vaccination affords. Why, then, should we permit this incomparably less infective and less dramatic tuberculosis to have sway with so little opposition when it is so readily controlled by limited segregation, disinfection, and widespread education?

Voluntary organizations are highly desirable for maintaining public interest and furthering education on the subject, but in those communities where most enthusiasm has already been shown in the fight, it is recognized that the control of tuberculosis is a task far beyond the resources of private philanthropy. It is unusual for any government to inaugurate remedial measures unless it is shown to be the evident wish of the people. The fact that two years ago a bill providing for the registration of tuberculosis in Ontario was given its quietus in a speech—made with the good intention, no doubt, of lessening the existing phthisiophobia—which belonged to

the days before Villemin, to say nothing of those before Koch, is fair evidence that this province is either unduly conservative or indifferent in some matters of public health. As a question of business method in meeting our problem, it is surely necessary to know where we stand in this matter regarding prevalence and social conditions, and this can only be accomplished by a stock-taking, made possible by notification and registration being enforced as a provincial measure, or at least encouraged as a municipal measure by government. Sociologists, both lay and medical, who have deeply considered the desirability of, and the effects produced by, notification and registration, and who have been instrumental in effecting it in their communities, where it has worked well, find the evidence so overwhelmingly in favour of it, and so little to be said in opposition, that to them serious discussion of the subject seems almost futile. To control the situation this measure is the logical first step, but it must be remembered that it is the initial measure towards the attainment of a desired end, and not an end in itself. Along with notification and registration must go the power to follow up and supervise cases, as otherwise the law will have but little practical bearing, and it will also be of extremely limited value if facilities are not provided and used to make registration effective in prevention. The success of notification has been found to be directly proportionate to the amount of help forthcoming for the notified patients. Bulstrode in his report to the Local Government Board, England, emphasizes the view that notification should not be made compulsory except under special enactment, such as expressly dissociates, administratively, phthisis and everyday infectious diseases.

While there are a number of moot points, every argument brought against notification can be reasonably met either by theory or by the result of experience, and it has been shown that a practical law can be framed and administered without causing hardship to the individual. In other communities opposition may be said to have arisen hitherto from practically only one source, namely, the medical profession, and where lay opposition arises it has been found that it can be traced to this source. It is quite possible that the opposition on the part of our profession, which has been so insistent in some communities, would be materially less were the procedure of the State of Maryland adopted. There, a fee of \$1.50 is allowed for each case reported, in order to compensate for the time consumed through filling out the necessary forms for notification and explaining to the patient and his family the principles of

10 THE CANADIAN MEDICAL ASSOCIATION JOURNAL

prevention, a time-absorbing procedure for which the patient cannot and will not pay.

There is much cause for congratulation upon the improved situation found in Ontario, to which, as a body and as individuals, physicians have contributed much, not only towards the broad sociological movement itself, but in making that movement effective by transmitting its intent to the individual. Nevertheless, there exists reason for inquiry concerning our present point of view upon pulmonary tuberculosis and the possibility of its early recognition, and also concerning the adequacy of the methods which now obtain in our daily work and which are of such moment to the future of the individual afflicted. The public welfare will depend upon organized social effort; the welfare of the individual will mainly depend upon the wisdom and training of his physician.

